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(54) 【発明の名称】 乾燥廃棄物用の破砕機

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(57) 【特許請求の範囲】

【請求項1】 乾燥廃棄物用の破砕機において、  
粉砕すべき材料を受け入れるための開口をその上端部に  
有する垂直に配列された円筒形のハウジングを備え、  
前記ハウジングは、皿型の回転可能なシュレッダ要素に

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前記ハウジングの下方室は、閉鎖された  
れた材料を排出するために接線方向に配  
口とを有し、  
前記シュレッダ要素にはまた、空気流並  
された粒子が前記上方室から前記下方室

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前記シュレッダ要素は、中央の軸によって、該シュレッダ要素を回転させる手段に接続されていることを特徴とする破砕機。

【請求項 2】 請求項 1 の破砕機において、前記シュレッダ要素の少なくとも一側部は平坦になされ、これにより、粉碎された材料を前記下方室の中へ移動させるための拡大された開口をもたらすことを特徴とする破砕機。

【請求項 3】 請求項 1 の破砕機において、前記上方に伸長するインペラ・ブレードには、前記回転方向において前方へ伸長する上方のエッジが設けられることを特徴とする破砕機。

【請求項 4】 請求項 2 の破砕機において、前記拡大された開口は、上方へ伸長するインペラブレードが前記回転するシュレッダの外周部と交差する点に位置する平坦な領域を借えることを特徴とする破砕機。

【請求項 5】 請求項 4 の破砕機において、前記インペラブレードは、外方へ伸長し且つ前記平坦な領域の縁部から張り出していることを特徴とする破砕機。

【請求項 6】 請求項 1 の破砕機において、前記インペラ・ブレードは Z 字形状のブラケットを借えることを特徴とする破砕機。

【請求項 7】 乾燥廃棄物用の破砕機において、粉碎すべき材料を受け入れるための開口をその上端部に有する垂直に配列された円筒形のハウジングを備え、前記ハウジングは、皿型の回転可能なシュレッダ要素によって、上方室及び下方室に分割されており、前記シュレッダ要素は、その上面に設けられて上方へ伸長する Z 字形状のインペラ・ブレードを有し、前記シュレッダ要素の外周部は、前記ハウジングの内壁部から十分に離されて隙間を形成し、これにより、該隙間を通して粉碎された材料が前記下方室の中へ落下することができ、前記シュレッダ要素にはまた、空気流並びに細かく分割された粒子が前記上方室から前記下方室へ流れるのを許容する多数の穴が設けられており、当該破砕機は更に、

前記ハウジングの前記上方室の内周部に均一に隔置されると共に、前記皿型のシュレッダ要素の回転方向において下方へ曲がっているダイバータ・ブレードを備え、前記ハウジングの下方室は、閉鎖された底部と、粉碎された材料を排出するために後端方向に配列された排出口

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前記シュレッダ要素は、中央の軸によって、該シュレッダ要素を回転させる手段に接続されている破砕機。

【発明の詳細な説明】

【0001】

【産業上の利用分野】 本発明は、廃棄物の装置に関する。より詳細には、本発明は医療廃棄物の如き材料、又は、発泡プラスチック他の材料を破砕又は粉碎し、次に、その材料を、洗浄水を供給して洗浄することを、廃棄することのできる廃棄物破砕機に関

【0002】

【従来の技術】 シンクすなわち流しに設けられた廃棄物用のディスプレイ、並びに、他の破砕装置は一般に、破砕された材料を排水物廃棄装置の中へ搬送する洗浄水と共に、塞が生ずる問題があるために、そのようには一般には水なしでは作動されていながら、多くの廃棄物は、それがもし乾燥されれば、より効率的に回収し、リサイクルは廃棄することができる。例えば、動物用されるように変換される食品廃棄物のルギを消費する乾燥工程を行う必要性が望ましい。従って、水を節約すること、衛生的な廃棄物処理装置によって洗浄、乾燥した廃棄物を生ずる廃棄手段をもたらす装置が必要とされている。

【0003】

【発明が解決しようとする課題】 本発明は、実際に使用可能な乾燥廃棄物破砕機を提供することである。

【0004】

【課題を解決するための手段】 本発明のれば、例えばファーストフードレストランの如き廃棄食品を乾燥状態で破砕し、該破砕動物又は家禽の餌として使用するために、凍で保存することができる。そのようなに従って粉碎し、その後、製品を安定化を防止するためにかなり低い湿分まで乾

【0005】 本発明の他の特徴によれば、

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けられる。回転するシュレツダ要素は、静止するハウジングの中の回転要素の周囲に取り付けられた固定型の曲がったダイバータ・ブレードと協働する。ダイバータ・ブレードは下方へ曲がっており、これにより、上記回転要素によって材料に与えられる遠心力を下向きの力に変換し、この下向きの力によって材料を回転切断要素へ送る。関連する特徴によれば、上記下方へ曲がったブレードは、搬送材料としての水を用いる必要なく、材料を上記切断要素へ送る手段をもたらす。

【0007】本発明のまた別の特徴によれば、上記回転する要素の底面には、パドルすなわち延長部が設けられ、これらパドルは、処理された材料を装置の下方のハウジングから排出ポートへ移動させる。

【0008】本発明の更に別の関連する特徴によれば、上記排出開口は、円筒形の下方のハウジングの領域の側部から外方へ伸びる接線方向の領域の形態を有し、これにより、回転するパドルによって粉碎された材料に与えられた力が、該粉碎された材料を下方のハウジングの外方へ効果的に吹き飛ばす。

【0009】本発明の選択的に採用できる別の特徴によれば、粉碎された材料を上記切断要素から排出領域へ通過させる拡大されたポートすなわち拡大された開口を形成するために、上記回転する要素の両側部には平坦な領域が設けられる。更に別の関連する特徴によれば、上記平坦な領域の寸法及び形状により、粉碎された材料の粒子径を注意深く制御することができると共に、破碎速度を制御することができる。

【0010】簡潔に総括すると、本発明は、乾燥廃棄物用のグラインダすなわち破碎機を提供し、該破碎機は、破碎すなわち粉碎すべき材料を受け入れるための開口をその上部に有する垂直に配列された円筒形のハウジングを備える。上記ハウジングは、皿型の回転可能なシュレツダ要素によって、上方室及び下方室に分割されている。上記シュレツダ要素は、その上面に設けられて上方へ伸長するインペラ・ブレードを有する。上記シュレツダ要素の外周は、隙間を形成するに十分なだけ上記ハウジングから離れており、粉碎された材料は、上記隙間を通過して、上記ハウジングの上方室から下方室へ落下することができる。上記ハウジングの上方部の内側の周囲には、上記シュレツダ要素の回転方向において下方へ曲が

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タの如き手段に接続されている。本発明によれば、上記シュレツダ要素の少なくともしくは両側部は平坦化され、これにより、材料が上方室から下方室へ移動できるように開口が形成される。この拡大された開口は、要素の平坦化された側部の形態であるのた、上方へ伸長するインペラ・ブレードは、シュレツダの外周と交差する点に位置される。上記シュレツダ要素の底部の上記パドルは、ハウジングの断面積のかなりの部分を占め、上記パドルは、その回転の際に、上気空気を押し出すと共に上記入口を通して的中へ空気を下方へ吸引することができ、を果たす。

【0011】本発明の更に別の実施例に、上方へ伸長するインペラ・ブレードには、前方へ伸長する上方面が設けられる。これにより、上記シュレツダ要素の上面に、Z字形状のブレードを用いて形成する

【0012】

【実施例】図面を参照して本発明を以下に示す。

【0013】図面を参照すると、その全が付けられたグラインダすなわち破碎機は、破碎機10は通常の感様でシンクす、口12の中に装着することができる。破碎すべき材料がシンクの開口12を通過して該材料を受け入れるための上方のスロ、備えている。

【0014】破碎機10は上方の破碎部、いる。図4に示すように接線方向に配列、18が下方のハウジング19の中に設け、料は破碎された後に上記排出開口から排、

【0015】回転可能なシュレツダ要素の破碎部分16を下方のハウジング19、排出部分から分離させている。上方のハ、のハウジングとの間の隙間21が、材料、ら下方のハウジング19の中へ落下する、破碎室16を包囲しているのは円筒形の、であって、該ケーシングの内側面には、

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プレート部分30から上方へ伸長するのはインペラ・ブレード32、34である。これらのブレードは、種々のサイズ又は密度の粒子にインペラ要素25が回転する際の遠心力を与えるために、必要に応じた種々の形状とすることができる。軸39に対してネジ式に嵌合することができるナット37によって、回転要素をハウジングの中に取り付けるために、円筒形の中央開口36が設けられている。穴31が、追加の空気並びに細かく分割された粒子を下方の室に入れて最終的に排出させるための手段を提供する。

【0016】破砕された粒子を下方のハウジングから排出するための手段をもたらし、回転要素25には配置されたパドル要素38が設けられており、これらパドル要素は、要素25が回転する際に、ハウジング19の断面積の大部分を掃除する。軸39は、通常の如く電動モータ（図示せず）によって回転駆動されるスピンドル40に接続されている。

【0017】図3に示す形状を有するシュレッダ要素25は、例えば、ファーストフード・レストランで一般に発生するタイプの食品廃棄物に対して良好に作動することが判明している。そのようなグラインダ材料を使用することにより、材料を破砕しすなわちそのサイズを減少させ、その材料を容器に排出することにより集めることができる。下水の排水管を必要とせず、廃棄物材料は水と混合されない。従って、廃棄物ディスポーザは、既存の施設又は規制法規により食品廃棄物を下水道に排出することができない設備で使用する事ができる。また、食品廃棄物は、該食品廃棄物に水を加えることによる問題を生ずることなく更に処理することができる。食品廃棄物を更にドライヤによって処理して残留水分を除去し、これにより、貯蔵の間の腐敗を遅らせ、また、動物の飼料とするように処理できる材料。又は、例えば堆肥化させるために使用できる材料を提供することができる。

【0018】図6を参照すると、シュレッダ要素50の代替例の形態が示されている。シュレッダ要素50は、インペラ・ブレード52の形態を除いて、シュレッダ要素25に類似している。図6に示すように、インペラ・ブレード52はZ字形の形態を有している。ブレード52の頂縁部53は、水平に配列されてシュレッダ要素50が回転する方向に伸長している。代替例においては、これらブレードの形状をC字形にすることもできることは理解されよう。図6のZ字形のブラケットは、例えば、針、管等を含むプラスチック、金属又は布製の医療廃棄物の如き固体材料の乾燥破砕に対して特に効果的であることが判明している。Z字形のブラケット52は、シュレッダ要素の粉砕すべき材料の粒子を捕足する有効性並びに該材料を遠心力によってZ字形のブレードの長さに沿って吹き飛ばしてダイバータ・ブレード28に強制的に衝突させる有効性を増大させる。2

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字形のブラケットは、硬い材料を上方室26の表面からはね上がるのを押さえる効果を有することが判明している。粉砕速度は、追加の遠心力すなわち側方への力において改善されることが判明しており、また、破砕並びに粉砕を助けることも判明している。ブレードに沿って移動する材料の力は、その材料の粒子によってブレードを連続的にプラスト掛けするすなわち擦ることにより、静止したシュレッダ部片を清浄に保つ。上記Z字形のブラケットはまた、ある種の食品廃棄物の如き粘着性のある又は湿った材料を乾燥破砕するのに役立つことが判明している。

【0019】本発明の更に別の実施例が図7及び図8に示されている。シュレッダユニット60の別の形態には、外方へ伸長するブレードすなわち突起62が設けられている。シュレッダ要素60の両側部には平坦な領域すなわち切り欠かれた領域64が設けられている。図示のように、上記平坦な領域は、ブレード62がシュレッダ要素60の外周と交差する点にその中心を置くように整合されるのが好ましい。図8に最も良く示すように、平坦な領域64は拡大された開口をもたらし、該開口は、破砕機26の上方室から下方室19へ材料を落下させる。上述の拡大された開口は、発泡プラスチックの如き軽量の材料を粉砕する場合に設けるのが特に望ましい。そのような材料は、より容易に貯蔵し且つ搬送され、例えば、より小さな粒子に粉砕された場合にはリサイクルされる。ブレード68を軸39に取り付け、ポリスチレンフォーム又は同様の嵩高な材料をより迅速に小さな部分に破砕することもできる。図示の実施例においては、上記ブレード68は、ナット37によって適所に保持されたU字形のブラケットの両端部に形成されている。

【0020】回転するシュレッダ要素の底部に設けられるパドルすなわちインペラ・ブレード38は、材料を下方室から開口18へ排出する役割を果たすと共に、プロアとしても作用する。回転するパドルは、大量の空気を排出部18から追い出し、これにより、破砕機の入口部分14を通じて空気を吸入することができる。その結果入口に生じた空気の負圧は、埃及び塵をディスポーザの中へ引き込む助けをする。これにより、臭気のある材料又は有害な材料を破砕している場合に、破砕装置のオペレータに対してより安全な環境が提供される。そのような作用は、そうでなければ破砕機が運転されている時にその入口から上方へ揮発する傾向のある発泡プラスチックの如き軽量の材料を処理する場合には特に重要である。

【0021】ダイバータ・ブレード28は、破砕機の用途のタイプに応じて種々の材料から形成することができる。例えば、ファーストフードの廃棄物、野菜廃棄物並びに発泡プラスチックの如き軟らかい材料を粉砕するためには、鋭角いエッジを有するステンレス鋼製のダイ

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バータ・ブレードを使用することができる。しかしながら、破砕機を硬質プラスチック、紙、あるいは骨の如きより硬い材料を破砕するために使用しようとする場合には、鋭利なエッジを有するより硬い荷造工具鋼が望ましい。図21及び平坦な領域64の寸法並びに形状により、破砕速度、並びに破砕された材料の粒子径の如き破砕性能が制御される。一般的には、平坦な領域64の寸法を増大させると、破砕速度が増大し、また、粒子径も増大する。発泡プラスチックの如きより軽い材料に対しては高い破砕速度が望ましく、一方、硬質プラスチック、又は、重たい食品の如き重畳のある材料は、モータの過負荷又は出口の閉塞を避けるために、より低い破砕速度を必要とする。

【0022】本発明の特定の実施例を例示として説明したが、本発明の範囲は特許請求の範囲によってのみ限定されることは理解されよう。

【図面の簡単な説明】

【図1】図示の便宜上ある部分を破断して断面で示し他の部分を破線で示す本発明の破砕機の側方立面図である。

【図2】図1の線2-2に沿って示す断面図である。 \*

\*【図3】本発明の破砕機の回転可能なシュレッダ要素の斜視図である。

【図4】図1の線4-4に沿って上記シュレッダ要素並びに下方ハウジングを示す断面図である。

【図5】本発明の他の実施例の破砕機の一部を断面で示す側方立面図である。

【図6】本発明の別の実施例の破砕機の回転要素の斜視図である。

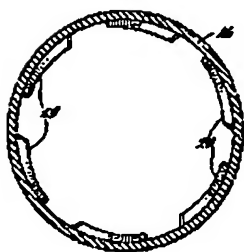
【図7】図5に示す実施例の破砕機の回転要素の斜視図である。

【図8】図5の線8-8に沿って示す断面図である。

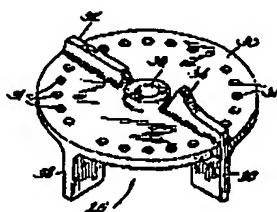
【符号の説明】

10 破砕機	14 開口（スロート部分）
16 上方室	18 排出開口
19 下方室	20 シュレッダ要素
21 隙間・ブレード	28 ダイバータ
32, 34 インペラ・ブレード	38 ブレード
39 中央の軸	64 平坦な領域

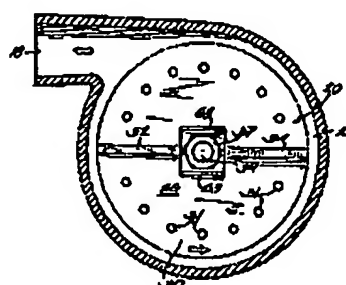
【図2】



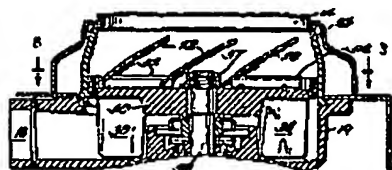
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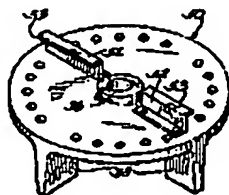
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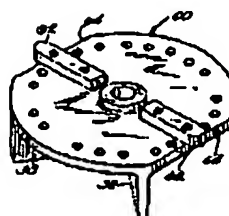
【図5】



【図6】



【図7】



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☒ STANDARD

☐ ZOOM-UP ROTATION

No Rotation



☐ REVERSAL

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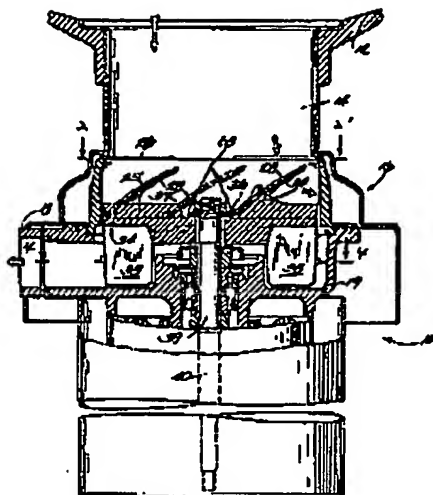
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DETAIL

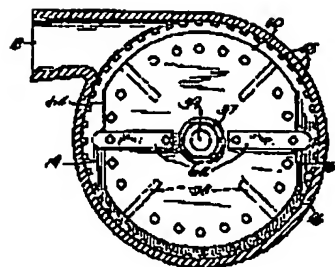
(5)

特許3420305

【図1】



【図8】



フロントページの続き

(56)参考文献 実開 昭64-8945 (J P, U)  
 実開 昭58-67545 (J P, U)  
 実開 昭50-137873 (J P, U)  
 米国特許2853249 (U S, A)

(58)調査した分野(Int.Cl.<sup>7</sup>, DB名)  
 B02C 18/00 - 18/44

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**DETAILED DESCRIPTION**

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[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the equipment for crushing trash. It is related more with a destroyable trash crusher, without needing for this invention to crush or grind food, the ingredient like medical waste, or other ingredients like foamed plastics, next to supply wash water and to wash the ground ingredient for a detail.

[0002]

[Description of the Prior Art] The trash shredding equipment of other types is used for the disposer for food trash prepared in a sink, i.e., a sink, and a list with the wash water which generally conveys the crushed ingredient into trash abandonment equipment through a drain pipe. Since there was a problem which lock out produces, if such a disposer had no water, generally it was not operating. However, if it is held at the condition of having dried, it collects more efficiently, and it can recycle or much trash can be discarded. for example, eliminating the need of performing the desiccation process which consumes energy in the case of the food trash changed so that it may be used as feed of an animal -- things are desirable. Therefore, the equipment which can bring about the abandonment means which produces dry trash without the need that can save water and a sanitary wastes treatment equipment washes is needed.

[0003]

[Problem(s) to be Solved by the Invention] The fundamental purpose of this invention is offering, actually usable a desiccation trash crusher, i.e., a grinder.

[0004]

[Means for Solving the Problem] According to one description of this invention, in order to crush the \*\*\*\* abandonment food generated, for example from a fast food restaurant by dryness and to use the this crushed ingredient as food of an animal or domestic fowls, it can save in the condition of having dried. Such an ingredient is dried to quite low hygroscopic moisture, in order to grind according to this invention, and to stabilize a product after that, therefore to prevent putrefaction.

[0005] According to other descriptions of this invention, the ingredient which could consider as the ingredient which crushed the medical waste like plastics, a stick, and a needle, and it was ground finely, i.e., was pulverized, and was this pulverized can be discarded safely, reducing the harmful nature accompanying abandonment of such [ usually ] an ingredient. According to still more nearly another description of this invention, it grinds good, and it can consider as a small particle, and foamed plastics or

the trash like other light ingredients can be discarded or recycled.

[0006] According to the important description of this invention, the shredder / impeller element made by configuration which processes the specific ingredient which should be discarded to the rotating shredder element the optimal are prepared. The rotating shredder element collaborates with the diverter blade at which the cover half attached in the perimeter of the rotation element in housing which stands it still turned. It has turned at the diverter blade below, it changes into the downward force by this the centrifugal force given to an ingredient with the above-mentioned rotation element, and sends an ingredient to a rotation cutting element according to this downward force. According to the related description, the water as a conveyance ingredient does not need to be used for the blade at which it turned to the above-mentioned lower part, and it brings about a means to send an ingredient to the above-mentioned cutting element.

[0007] According to another description of this invention, a paddle, i.e., an extension, is formed in the base of the above-mentioned element which carries out rotation, and these paddles make it move the processed ingredient to a discharge port from housing of the lower part of equipment again.

[0008] According to still more nearly another related description of this invention, the above-mentioned discharge opening has the gestalt of the field of the tangential direction extended from one flank of the field of housing of the lower part of a cylindrical shape to the method of outside, and, thereby, the force given to the ingredient ground by the rotating paddle blows away the this ground ingredient effectively to a way outside downward housing.

[0009] In order to form the expanded port, i.e., expanded opening, which passes the ground ingredient from the above-mentioned cutting element to a discharge field according to another description employable alternatively [ this invention ], a flat field is established in the both-sides section of the above-mentioned element which carries out rotation. furthermore -- according to another related description -- the above -- a crushing rate is controllable while the particle diameter of the ground ingredient is carefully controllable by the flat dimension and flat configuration of a field.

[0010] If it summarizes briefly, this invention will offer, the grinder, i.e., the crusher, for desiccation trash, and this crusher will be equipped with housing of the cylindrical shape which has opening for receiving the ingredient which should be crushed namely, ground in the upper limit section and which was arranged perpendicularly. The above-mentioned housing is divided into the upper part room and the lower part room by the pivotable pan type shredder element. The above-mentioned shredder element has the impeller blade which it is prepared in the top face and elongated upwards. The ingredient which the periphery of the above-mentioned shredder element is separated from the above-mentioned housing as it is enough to form a clearance, and was ground can pass along the above-mentioned clearance, and can fall from the upper part room of the above-mentioned housing to a lower part room. The diverter blade at which it turned below in the hand of cut of the above-mentioned shredder element is prepared in the perimeter inside the upper part section of the above-mentioned housing. Housing of the above-mentioned lower part is equipped with the closed pars basilaris ossis occipitalis and the discharge element arranged in the tangential direction in order to discharge the ground ingredient from housing of the above-mentioned lower part. The above-mentioned shredder element has the blade elongated caudad on the inferior surface of tongue, it

elongates caudad into housing of the above-mentioned lower part, and this blade is made as [ drive / the ingredient which cleaned housing of the above-mentioned lower part and was ground / to the method of outside / of this housing / into opening of the above-mentioned tangential direction ]. The above-mentioned shredder element is connected to a means like an electric motor to rotate this shredder element by the central shaft.

According to one example of this invention, at least 1 flank, preferably, flattening of the both-sides section is carried out, and, thereby, expanded opening the ground ingredient of the above-mentioned shredder element enables it to move to a lower part room from an upper part room is formed. As for this expanded opening, it is desirable that it is the gestalt of the flank to which flattening of the above-mentioned pan type element was carried out, and it is desirable to be located in the point which intersects the periphery of the shredder which the impeller blade elongated upwards rotates. The above-mentioned paddle of the pars basilaris ossis occipitalis of the above-mentioned shredder element occupies most part of the cross section of housing of the above-mentioned lower part, and thereby, the above-mentioned paddle plays the role of Blois which can attract air below into this disposer through the above-mentioned inlet port while extruding air from the above-mentioned discharge opening in the case of the rotation.

[0011] According to still more nearly another example of this invention, the upper part side elongated to the front in a hand of cut is established in the impeller blade elongated to the above-mentioned upper part. As for this upper part side, i.e., an edge, it is desirable to form using the blade of the Z character configuration attached in the top face of the above-mentioned shredder element.

[0012]

[Example] With reference to a drawing, this invention is explained below at a detail.

[0013] Reference of a drawing shows, the grinder, i.e., the crusher, by which the reference mark 10 was given to the whole. It can equip with a crusher 10 into the opening 12 of a sink, i.e., a sink, in the usual mode. The crusher 10 is equipped with the upper throat part 14 for receiving this ingredient in case the ingredient which should be crushed is discharged through the opening 12 of a sink.

[0014] The crusher 10 is equipped with the upper crushing part 16. As shown in drawing 4, the discharge opening 18 arranged in the tangential direction is formed into the downward housing 19, and after an ingredient is crushed, it is discharged from the above-mentioned discharge opening.

[0015] The pivotable shredder element 20 is making the crushing part 16 of a crusher separate from the discharge part located in the downward housing 19. The clearance 21 between upper housing and downward housing permits that an ingredient falls into the downward housing 19 from the crushing room 16. The casing 26 of a cylindrical shape is surrounding the crushing room 16, and it is prepared in the medial surface of this casing, the diverter blade 28, i.e., the deviation blade, to which it \*\*\*\*(ed) and the include angle was given. The downward force is given to the ingredient which collided with the above-mentioned blade according to the centrifugal force of the element 20 which the include angle is given to the blade 28, therefore rotates, and an ingredient is crushed by this downward force to sufficient size to enter into downward \*\* 19 through a clearance 21. One gestalt of a rotation element is shown in drawing 3, and the reference mark 25 is given to the whole. The impeller element 25 is equipped with the flat plate part 30, and can form the circular opening 31 in the periphery section of this plate part. It is the

impeller blades 32 and 34 which are elongated upwards from the plate part 30. These blades can be made into various configurations as occasion demands in order to give the centrifugal force at the time of the impeller element 25 rotating to various sizes or the particle of a consistency. With the nut 37 which can be inserted in a screw type to a shaft 39, in order to attach a rotation element into housing, the central opening 36 of a cylindrical shape is formed. A means for a hole 31 to put the particle finely divided into the additional air list into downward \*\*, and make it discharging finally is offered.

[0016] In order to bring about the means for discharging the crushed particle from downward housing, the \*\*\*\*(ed) paddle element 38 is formed in the rotation element 25, and these paddle element cleans the great portion of cross section of housing 19, in case an element 25 rotates. The shaft 39 is connected to the spindle 40 by which a rotation drive is carried out with an electric motor (not shown) like usual.

[0017] It has become clear that the shredder element 25 which has the configuration shown in drawing 3 operates good to the food trash of the type generally generated for example, at a fast food restaurant. By using such a grinder ingredient, an ingredient can be crushed, namely, the size can be decreased and it can collect by discharging the ingredient in a container. The drain pipe of sewage is not needed and a trash ingredient is not mixed with water. Therefore, a trash disposer can be used with the facility which cannot discharge food trash in sewerage with an existing facility or an existing regulation regulation. Moreover, food trash can be processed further, without producing the problem by adding water to this food trash. The ingredient which can be processed so that may process food trash with a dryer further, residual moisture may be removed, and putrefaction between storage may be delayed by this and it may consider as the feed of an animal, or the ingredient which can be used in order to make it compost for example can be offered.

[0018] Reference of drawing 6 shows the gestalt of the alternative example of the shredder element 50. The shredder element 50 is similar to the shredder element 25 except for the gestalt of an impeller blade 52. As shown in drawing 6, the impeller blade 52 has the gestalt of a Z character configuration. The top edge 53 of a blade 52 is elongated in the direction which it is horizontally arranged and the shredder element 50 rotates. In an alternative example, it will also be understood that the configuration of these blades can be made into the shape of a C typeface. It has become clear that the bracket of the Z character configuration of drawing 6 is [ as opposed to / especially / desiccation crushing of the solid material like the medical waste made of the plastics containing a needle, tubing, etc., a metal, or cloth ] effective. The bracket 52 of a Z character configuration increases the effectiveness which blows away this ingredient in the effectiveness list supplementary to the particle of the ingredient which should grind a shredder element along with the die length of the blade of a Z character configuration according to a centrifugal force, and is made to collide with it compulsorily to the diverter blade 28. It has become clear that it has the effectiveness of pressing down the bracket of a Z character configuration going up a hard ingredient from the front face of the upper part room 26. It has also become clear that it has become clear that a grinding rate improves in an additional centrifugal force, i.e., the force to the side, and grinding is helped in a crushing list. The force of the ingredient which moves along with a blade maintains the stationary shredder piece at clarification by carrying out blasting credit of the blade continuously by the particle of the ingredient, i.e., grinding. It has become clear

that it is useful to being or the bracket of the above-mentioned Z character configuration carrying out desiccation crushing of the damp ingredient which is the adhesiveness like a certain kind of food trash again.

[0019] Still more nearly another example of this invention is shown in drawing 7 and drawing 8. It is prepared in another gestalt of the shredder unit 60, the blade 62, i.e., the projection, elongated to the method of outside. It cuts and the flat field 64, i.e., the lacked field, is established in the both-sides section of the shredder element 60. illustration -- like -- the above -- as for a flat field, it is desirable to have consistency so that the core may be put on the point that a blade 62 intersects the periphery of the shredder element 60. The flat field 64 brings about expanded opening and this opening drops an ingredient from the upper part room of a crusher 26 to the lower part room 19 so that it may be best shown in drawing 8. As for opening to which the \*\*\*\* was expanded, it is desirable especially to prepare, when grinding the lightweight ingredient like foamed plastics. It is recycled, when such an ingredient is stored more easily, and is conveyed, for example, it is ground by the smaller particle. A blade 68 can be attached in a shaft 39 and polystyrene foam or the same bulky ingredient can also be crushed into a more quickly small part. The above-mentioned blade 68 is formed in the both ends of the bracket of the U character configuration held with the nut 37 in the proper place in the example of illustration.

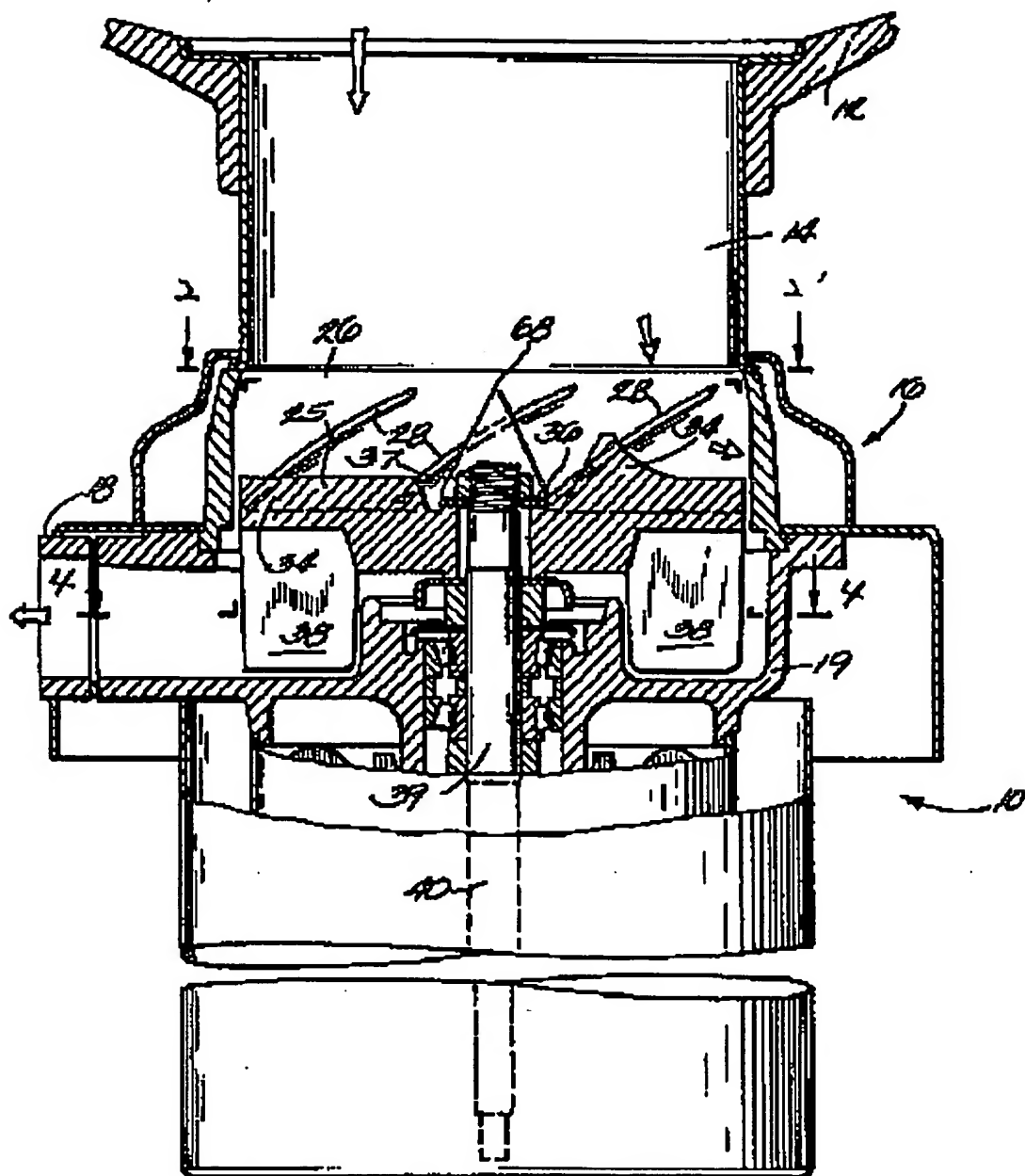
[0020] It acts also as Blois while playing the role which discharges an ingredient from a lower part room to opening 18, the paddle 38, i.e., the impeller blade, prepared in the pars basilaris ossis occipitalis of the rotating shredder element. The rotating paddle can drive out a lot of air of the discharge section 18, and, thereby, can inhale air through the inlet-port part 14 of a crusher. The negative pressure of the air produced at the inlet port as a result carries out assistance which draws dust and dust into a disposer. When this has crushed an ingredient or a harmful ingredient with an odor, a safer environment is offered to the operator of shredding equipment. Such an operation is important, especially when the crusher is operated and it processes the lightweight ingredient like foamed plastics with the inclination which floats upwards from the inlet port, if that is not right.

[0021] The diverter blade 28 can be formed from various ingredients according to the type of the application of a crusher. For example, in order to grind the soft ingredient like foamed plastics in the trash of a fast food, and a vegetable trash list, the diverter blade made from stainless steel which has a little round edge can be used. However, when it is going to use a crusher in order to grind a rigid plastic, paper, or the harder ingredient like a bone, hard casting tool steel is desirable rather than it has a sharp edge. The friability ability like the particle diameter of the ingredient ground in the crushing rate and the list is controlled by the configuration by a clearance 21 and the flat dimension list of field 64 \*\*. Generally, if the dimension of the flat field 64 is increased, a crushing rate will increase and particle diameter will also increase. In order that the ingredient which whose high crushing rate is desirable and, on the other hand, has a rigid plastic or the weight like heavy food may avoid the overload of a motor, or lock out of an outlet to the lighter ingredient like foamed plastics, a lower crushing rate is needed.

[0022] Although the specific example of this invention was explained as instantiation, it will be understood that the range of this invention is limited by only the claim.

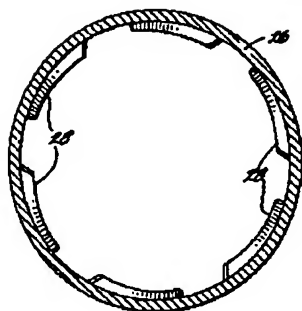
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Drawing selection drawing 2

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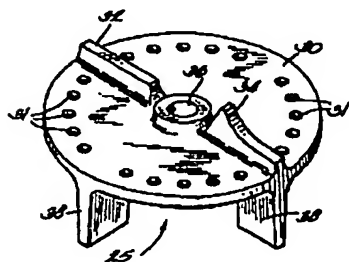
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Drawing selection drawing 3 ☒

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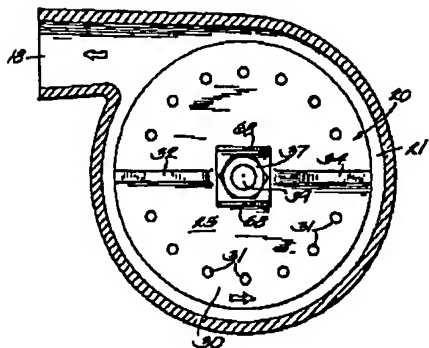


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Drawing selection drawing 4 ▾

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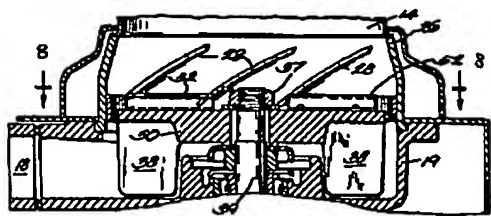


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Drawing selection drawing 5 ☒

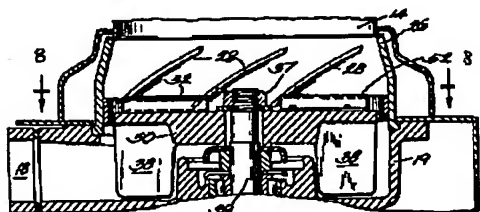
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[Translation done.]

Drawing selection drawing 6 ▾

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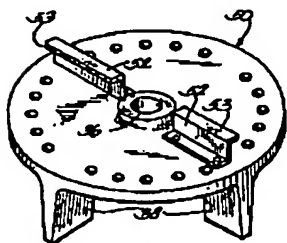


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Drawing selection drawing 7 ▾

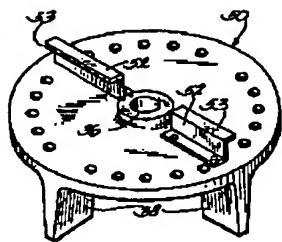
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[Translation done.]

Drawing selection drawing 8

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**CLAIMS**

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(57) [Claim(s)]

[Claim 1] It has housing of the cylindrical shape which has opening for receiving the ingredient which should be ground in the crusher for desiccation trash in the upper limit section and which was arranged perpendicularly. Said housing It is divided into the upper part room and the lower part room by the pivotable pan type shredder element. Said shredder element It has the impeller blade which it is prepared in the top face and elongated upwards. The periphery section of said shredder element It fully separates from the wall section of said housing, and a clearance is formed. By this The ingredient ground through this clearance can fall into said lower part room, and further, while the crusher concerned is \*\*\*\*(ed) by homogeneity at the inner circumference section of said upper part room of said housing It has the diverter blade at which it has turned below in the hand of cut of a said pan type shredder element. The lower part room of said housing It has the closed pars basilaris ossis occipitalis and the discharge outlet arranged in the tangential direction in order to discharge the ground ingredient. The hole of a large number which permit that the particle divided finely flows from said upper part room to said lower part room is established in said shredder element again at the airstream list. Said shredder element It has the paddle caudad elongated from the inferior surface of tongue. These paddles Most part of the cross section of said lower part room is occupied, and the role of Blois is played in the case of the rotation. By this Air can be moved to a way outside said discharge outlet, and air can be caudad drawn into the disposer concerned through opening for receiving said ingredient which should be ground. It is the crusher which is made as [ discharge / from the discharge outlet arranged in said tangential direction / to the method of outside / the ingredient which cleaned said lower part room and was ground ], and is characterized by connecting said shredder element to a means to rotate this shredder element with a central shaft.

[Claim 2]recycled.

[0006] According to the important description of this invention, the shredder / impeller element made by configuration which processes the specific ingredient which should be discarded to the rotating shredder element the optimal are prepared. The rotating shredder element collaborates with the diverter blade at which the cover half attached in the perimeter of the rotation element in housing which stands it still turned. It has turned at the diverter blade below, it changes into the downward force by this the centrifugal force given to an ingredient with the above-mentioned rotation element, and sends an ingredient to a rotation cutting element according to this downward force. According to the related description, the water as a conveyance ingredient does not need to be used for

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the blade at which it turned to the above-mentioned lower part, and it brings about a means to send an ingredient to the above-mentioned cutting element.

[0007] According to another description of this invention, a paddle, i.e., an extension, is formed in the base of the above-mentioned element which carries out rotation, and these paddles make it move the processed ingredient to a discharge port from housing of the lower part of equipment again.

[0008] According to still more nearly another related description of this invention, the above-mentioned discharge opening has the gestalt of the field of the tangential direction extended from one flank of the field of housing of the lower part of a cylindrical shape to the method of outside, and, thereby, the force given to the ingredient ground by the rotating paddle blows away the this ground ingredient effectively to a way outside downward housing.

[0009] In order to form the expanded port, i.e., expanded opening, which passes the ground ingredient from the above-mentioned cutting element to a discharge field according to another description employable alternatively [ this invention ], a flat field is established in the both-sides section of the above-mentioned element which carries out rotation. furthermore -- according to another related description -- the above -- a crushing rate is controllable while the particle diameter of the ground ingredient is carefully controllable by the flat dimension and flat configuration of a field.

[0010] If it summarizes briefly, this invention will offer, the grinder, i.e., the crusher, for desiccation trash, and this crusher will be equipped with housing of the cylindrical shape which has opening for receiving the ingredient which should be crushed namely, ground in the upper limit section and which was arranged perpendicularly. The above-mentioned housing is divided into the upper part room and the lower part room by the pivotable pan type shredder element. The above-mentioned shredder element has the impeller blade which it is prepared in the top face and elongated upwards. The ingredient which the periphery of the above-mentioned shredder element is separated from the above-mentioned housing as it is enough to form a clearance, and was ground can pass along the above-mentioned clearance, and can fall from the upper part room of the above-mentioned housing to a lower part room. The diverter blade at which it turned below in the hand of cut of the above-mentioned shredder element is prepared in the perimeter inside the upper part section of the above-mentioned housing. Housing of the above-mentioned lower part is equipped with the closed pars basilaris ossis occipitalis and the discharge element arranged in the tangential direction in order to discharge the ground ingredient from housing of the above-mentioned lower part. The above-mentioned shredder element has the blade elongated caudad on the inferior surface of tongue, it elongates caudad into housing of the above-mentioned lower part, and this blade is made as [ drive / the ingredient which cleaned housing of the above-mentioned lower part and was ground / to the method of outside / of this housing / into opening of the above-mentioned tangential direction ]. The above-mentioned shredder element is connected to a means like an electric motor to rotate this shredder element by the central shaft. According to one example of this invention, at least 1 flank, preferably, flattening of the both-sides section is carried out, and, thereby, expanded opening the ground ingredient of the above-mentioned shredder element enables it to move to a lower part room from an upper part room is formed. As for this expanded opening, it is desirable that it is the gestalt of the flank to which flattening of the above-mentioned pan type element was

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carried out, and it is desirable to be located in the point which intersects the periphery of the shredder which the impeller blade elongated upwards rotates. The above-mentioned paddle of the pars basilaris ossis occipitalis of the above-mentioned shredder element occupies most part of the cross section of housing of the above-mentioned lower part, and thereby, the above-mentioned paddle plays the role of Blois which can attract air below into this disposer through the above-mentioned inlet port while extruding air from the above-mentioned discharge opening in the case of the rotation.

[0011] According to still more nearly another example of this invention, the upper part side elongated to the front in a hand of cut is established in the impeller blade elongated to the above-mentioned upper part. As for this upper part side, i.e., an edge, it is desirable to form using the blade of the Z character configuration attached in the top face of the above-mentioned shredder element.

[0012]

[Example] With reference to a drawing, this invention is explained below at a detail.

[0013] Reference of a drawing shows, the grinder, i.e., the crusher, by which the reference mark 10 was given to the whole. It can equip with a crusher 10 into the opening 12 of a sink, i.e., a sink, in the usual mode. The crusher 10 is equipped with the upper throat part 14 for receiving this ingredient in case the ingredient which should be crushed is discharged through the opening 12 of a sink.

[0014] The crusher 10 is equipped with the upper crushing part 16. As shown in drawing 4, the discharge opening 18 arranged in the tangential direction is formed into the downward housing 19, and after an ingredient is crushed, it is discharged from the above-mentioned discharge opening.

[0015] The pivotable shredder element 20 is making the crushing part 16 of a crusher separate from the discharge part located in the downward housing 19. The clearance 21 between upper housing and downward housing permits that an ingredient falls into the downward housing 19 from the crushing room 16. The casing 26 of a cylindrical shape is surrounding the crushing room 16, and it is prepared in the medial surface of this casing, the diverter blade 28, i.e., the deviation blade, to which it \*\*\*\*(ed) and the include angle was given. The downward force is given to the ingredient which collided with the above-mentioned blade according to the centrifugal force of the element 20 which the include angle is given to the blade 28, therefore rotates, and an ingredient is crushed by this downward force to sufficient size to enter into downward \*\* 19 through a clearance 21.

One gestalt of a rotation element is shown in drawing 3, and the reference mark 25 is given to the whole. The impeller element 25 is equipped with the flat plate part 30, and can form the circular opening 31 in the periphery section of this plate part. It is the impeller blades 32 and 34 which are elongated upwards from the plate part 30. These blades can be made into various configurations as occasion demands in order to give the centrifugal force at the time of the impeller element 25 rotating to various sizes or the particle of a consistency. With the nut 37 which can be inserted in a screw type to a shaft 39, in order to attach a rotation element into housing, the central opening 36 of a cylindrical shape is formed. A means for a hole 31 to put the particle finely divided into the additional air list into downward \*\*, and make it discharging finally is offered.

[0016] In order to bring about the means for discharging the crushed particle from downward housing, the \*\*\*\*(ed) paddle element 38 is formed in the rotation element 25, and these paddle element cleans the great portion of cross section of housing 19, in case

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an element 25 rotates. The shaft 39 is connected to the spindle 40 by which a rotation drive is carried out with an electric motor (not shown) like usual.

[0017] It has become clear that the shredder element 25 which has the configuration shown in drawing 3 operates good to the food trash of the type generally generated for example, at a fast food restaurant. By using such a grinder ingredient, an ingredient can be crushed, namely, the size can be decreased and it can collect by discharging the ingredient in a container. The drain pipe of sewage is not needed and a trash ingredient is not mixed with water. Therefore, a trash disposer can be used with the facility which cannot discharge food trash in sewerage with an existing facility or an existing regulation. Moreover, food trash can be processed further, without producing the problem by adding water to this food trash. The ingredient which can be processed so that may process food trash with a dryer further, residual moisture may be removed, and putrefaction between storage may be delayed by this and it may consider as the feed of an animal, or the ingredient which can be used in order to make it compost for example can be offered.

[0018] Reference of drawing 6 shows the gestalt of the alternative example of the shredder element 50. The shredder element 50 is similar to the shredder element 25 except for the gestalt of an impeller blade 52. As shown in drawing 6, the impeller blade 52 has the gestalt of a Z character configuration. The top edge 53 of a blade 52 is elongated in the direction which it is horizontally arranged and the shredder element 50 rotates. In an alternative example, it will also be understood that the configuration of these blades can be made into the shape of a C typeface. It has become clear that the bracket of the Z character configuration of drawing 6 is [ as opposed to / especially / desiccation crushing of the solid material like the medical waste made of the plastics containing a needle, tubing, etc., a metal, or cloth ] effective. The bracket 52 of a Z character configuration increases the effectiveness which blows away this ingredient in the effectiveness list supplementary to the particle of the ingredient which should grind a shredder element along with the die length of the blade of a Z character configuration according to a centrifugal force, and is made to collide with it compulsorily to the diverter blade 28. It has become clear that it has the effectiveness of pressing down the bracket of a Z character configuration going up a hard ingredient from the front face of the upper part room 26. It has also become clear that it has become clear that a grinding rate improves in an additional centrifugal force, i.e., the force to the side, and grinding is helped in a crushing list. The force of the ingredient which moves along with a blade maintains the stationary shredder piece at clarification by carrying out blasting credit of the blade continuously by the particle of the ingredient, i.e., grinding. It has become clear that it is useful to being or the bracket of the above-mentioned Z character configuration carrying out desiccation crushing of the damp ingredient which is the adhesiveness like a certain kind of food trash again.

[0019] Still more nearly another example of this invention is shown in drawing 7 and drawing 8. It is prepared in another gestalt of the shredder unit 60, the blade 62, i.e., the projection, elongated to the method of outside. It cuts and the flat field 64, i.e., the lacked field, is established in the both-sides section of the shredder element 60. illustration -- like -- the above -- as for a flat field, it is desirable to have consistency so that the core may be put on the point that a blade 62 intersects the periphery of the shredder element 60. The flat field 64 brings about expanded opening and this opening drops an ingredient

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from the upper part room of a crusher 26 to the lower part room 19 so that it may be best shown in drawing 8 . As for opening to which the \*\*\*\* was expanded, it is desirable especially to prepare, when grinding the lightweight ingredient like foamed plastics. It is recycled, when such an ingredient is stored more easily, and is conveyed, for example, it is ground by the smaller particle. A blade 68 can be attached in a shaft 39 and polystyrene foam or the same bulky ingredient can also be crushed into a more quickly small part. The above-mentioned blade 68 is formed in the both ends of the bracket of the U character configuration held with the nut 37 in the proper place in the example of illustration.

[0020] It acts also as Blois while playing the role which discharges an ingredient from a lower part room to opening 18, the paddle 38, i.e., the impeller blade, prepared in the pars basilaris ossis occipitalis of the rotating shredder element. The rotating paddle can drive out a lot of air of the discharge section 18, and, thereby, can inhale air through the inlet-port part 14 of a crusher. The negative pressure of the air produced at the inlet port as a result carries out assistance which draws dust and dust into a disposer. When this has crushed an ingredient or a harmful ingredient with an odor, a safer environment is offered to the operator of shredding equipment. Such an operation is important, especially when the crusher is operated and it processes the lightweight ingredient like foamed plastics with the inclination which floats upwards from the inlet port, if that is not right.

[0021] The diverter blade 28 can be formed from various ingredients according to the type of the application of a crusher. For example, in order to grind the soft ingredient like foamed plastics in the trash of a fast food, and a vegetable trash list, the diverter blade made from stainless steel which has a little round edge can be used. However, when it is going to use a crusher in order to grind a rigid plastic, paper, or the harder ingredient like a bone, hard casting tool steel is desirable rather than it has a sharp edge. The friability ability like the particle diameter of the ingredient ground in the crushing rate and the list is controlled by the configuration by a clearance 21 and the flat dimension list of field 64 \*\*. Generally, if the dimension of the flat field 64 is increased, a crushing rate will increase and particle diameter will also increase. In order that the ingredient which whose high crushing rate is desirable and, on the other hand, has a rigid plastic or the weight like heavy food may avoid the overload of a motor, or lock out of an outlet to the lighter ingredient like foamed plastics, a lower crushing rate is needed.

[0022] Although the specific example of this invention was explained as instantiation, it will be understood that the range of this invention is limited by only the claim.

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